According to a first aspect of the present invention there is provided a device for reading fluorescence signals comprising:

an illuminator for illuminating a material at an appropriate wavelength to induce fluorescence;

a detector for detecting fluorescent signals emitted by the material;

a signal processor for processing the signals detected;

characterised in that the illuminator comprises a light emitting diode (LED), and in that the illuminator illuminates all, or a substantial portion of the material simultaneously.

A method of analysing signals emitted from a sample of material bound with a fluorophore, the method comprising the steps of:

illuminating the sample at an appropriate wavelength to cause fluorescence in the sample,

detecting fluorescent signals emitted by the sample once the sample has been illuminated;

analysing signals detected,

characterised in that the sample is illuminated using a light emitting diode (LED), and in that all, or a substantial portion of the material is illuminated simultaneously.

Existing systems for reading fluorescent signals particularly from microarray assays have all been imaging systems which produce high resolution image of the or each microspot of material, typically comprising over 400 pixels for subsequent analysis.

To achieve the signal to noise levels required to measure the signal from each pixel comprising the image, it had been thought necessary to use a coherent laser light source of relatively high power to illuminate the material but generally such lasers are expensive and excitation wavelengths

CLAIMS

1. A device for reading fluorescent signals comprising:

an illuminator for illuminating a material bound with a fluorophore, at an appropriate wavelength to induce fluorescence;

a detector for detecting fluorescent signals emitted by the material;

a signal processor for processing the signals detected;

the device defining an optical system having an excitation optical path and a detection optical path;

characterised in that the illuminator comprises a light emitting diode (LED), and in that the illumination illuminates all, or a substantial portion of the material simultaneously.

2. A device according to Claim 1 further comprising an excitation filter positioned in the excitation optical path to filter out longer wavelengths emitted by the LED before they reach the material to be analysed.

3. A device according to Claim 2 wherein the excitation filter comprises a short band pass interference filter.

4. A device according to any one of the preceding claims further comprising an emission filter positioned in the detection optical path to filter out any directly reflected illumination from the material.

5. A device according to any one of the preceding claims wherein the material is deposited on a substantially flat surface.

6. A device according to Claim 5 wherein the substantially flat surface comprises a glass slide.

7. A device according to any one of the preceding claims further comprising a polarising filter positioned in the excitation optical path to be perpendicular to the input polarisation.

8. A device according to Claim 7 further comprising a second polarising filter positioned in the detection optical path and orientated at right angles to the first polarising filter such that the two filters comprise crossed polarisers positioned in the excitation and the detection optical paths respectively.

9. A device according to any one of Claims 1 to 6 further comprising a polarising beam splitter positioned to lie in both the excitation and detection optical paths.

10. A device according to any of the preceding claims wherein the signal processor comprises a phase sensitive detector.

11. A device substantially as hereinbefore described with reference to the accompanying drawings.

12. A method of analysing signals emitted from a sample of material bound with a fluorophore, the method comprising the steps of:

illuminating the sample at an appropriate wavelength to cause fluorescence in the sample;

detecting fluorescent signals emitted by the sample once the sample has been illuminated;

analysing signals detected by the detector,

characterised in that the sample is illuminated using a light emitting diode (LED), and in that all, or a substantial portion of the material is illuminated simultaneously.

13. A method of analysing signals emitted from a sample of material bound with a fluorophore using a device according to any one of Claims 1 to 11.

14. A method substantially as hereinbefore described with reference to the accompanying drawings.